

REMARKS

Favorable reconsideration of this Application and the Office Action of September 26, 2006 are respectfully requested in view of the foregoing amendments and the following remarks.

Claims 1, 2, 4 to 19 and 22 to 32 remain under consideration in this application as amended. Claims 3, 20 and 21 have been cancelled by this Response. Claims 1, 8, 9 and 19 have been amended to include the organic polar solvent(s) from claims 3 and paragraph 0015 of the specification. Claim 1 further specifies that the reaction is conducted at a temperature of about 120°C or above, as stated in paragraph 0015 of the specification. The claims, as per the amendment to claims 1, 22-24, 26-28 and 30, now specify that the reactant is a fluorinated bromobenzene, i.e., $n=1$ to 5, as supported in paragraph 0008 of the specification. Claim 1 also now specifies the amount of palladium catalyst and phase-transfer catalyst, as supported by paragraphs 0006, 0011, 0012 and the examples in the specification. Claims 6 and 15 have been amended to a preferred range of palladium catalyst and phase-transfer catalyst in view of the specification of the ranges in claim 1. In view of the amendments to the claims the dependency of claims 10, 17, 24, 27 and 31 has been changed. No new matter is presented by these amendments. Since the total number of claims remaining (29) and total number of independent claims remaining (1) are less than the 32 total claims and three independent claims previously paid for no additional fee is required by this Amendment Response.

There are seven (7) 35 U.S.C. Section 103 rejections of the claims set forth in the Office Action. The primary rejection is of claims 1-3, 6-10, 12, 16 and 17 over the disclosure in Jacobs et al. (Chem. Comm. 2002, 1062-1063). The remaining six (6) Section 103 rejections of various other claims all rely upon the disclosure in the Jacobs et al. article as the primary reference taken in view of various other secondary references. Applicant respectfully traverses all seven of these Section 103 rejections on the grounds

that the deficiencies in the disclosure in Jacobs et al. article render the rejections erroneous, particularly since the deficiencies of the Jacobs et al. article are not cured by any the secondary reference disclosures.

As stated in Applicant's specification, Applicant has discovered that cinnamic acids and alkyl esters thereof can be prepared in almost quantitative yields in a Heck reaction of a **fluorinated** bromobenzene with an alkyl acrylate in the presence of a palladium catalyst and a phase-transfer catalyst **in an organic polar solvent** and **that such reaction only needs to employ from about 0.008 to about 0.01 mol% palladium catalyst per mol of fluorinated bromobenzene reactant and only about 0.05 to about 0.1 equivalent per mol of bromobenzene reactant**. This is a critical and significant discovery. Prior to Applicant's invention it was necessary to employ much more palladium catalyst and phase-transfer catalyst with bromobenzene reactant than the very low amounts required by Applicant's invention with the fluorinated bromobenzene reactant. In the prior art, e.g., the Jacobs et al article, the reaction is with a non-fluorinated bromobezene, not with a **fluorinated** bromobenzene reactant as required by the present invention. Furthermore the Jacobs et al. reaction is conducted in non-polar toluene solvent and not in an organic polar solvent. Additionally, the reaction in Jacobs et al. employs significantly greater amounts of palladium catalyst (0.125 mols) and phase transfer catalyst (1.2 equivalent), i.e., a least one order of magnitude greater that required by Applicant.

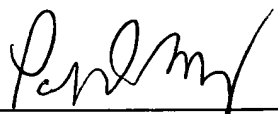
That Applicant was able to obtain almost quantitative yields with its reactants and reaction conditions and employ only the very significantly reduced amounts of palladium catalyst and phase-transfer agent is a very significant advance in the art since palladium catalyst are extremely expensive and very difficult to recycle. Additionally, the large quantities of phase-transfer catalyst use by Jacobs et al. (1.1 equivalent) will end up in the aqueous waste water stream and cannot be recycled. Nothing in the Jacobs et al. article disclosure would suggest to one skilled in the art that by employing the fluorinated bromobenzene reactant, an organic polar solvent, and a high reaction temperature would enable one to utilize the very small amounts of palladium catalyst and phase-transfer

catalyst that Applicant was able to employ and thereby obtain almost quantitative yield of product. None of these deficiencies in Jacobs et al. are cured by the disclosure in any of the secondarily applied references. Therefore, all seven of the Section 103 rejections are factually and legally deficient and, therefore, the USPTO is respectfully requested to reconsider and withdraw all seven of these rejections.

It is respectfully submitted that the foregoing is a full and complete response to the Office Action and that all the claims are allowable for at least the reasons indicated. An early indication of their allowability by issuance of a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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